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Hoya anulata (Apocynaceae: Asclepiadoideae): a new record for Maluku, Indonesia

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Abstract

Hoya anulata Schltr. (Apocynaceae: Asclepiadoideae) is recorded for the first time from the Maluku Islands based on a specimen collected on Buru Island. A description of Maluku plants, along with notes on distribution, ecology, and a brief discussion are presented. The species is considered native to Buru Island.

Keywords: epiphyte, *Hoya anulata*, Maluku, new record, taxonomy

Introduction

Hoya R.Br. is a diverse genus within the Apocynaceae (*sensu* APG IV 2016), with perhaps as many as 350–450 species (Lamb and Rodda 2016). *Hoya* is highly appreciated for its horticultural values (Rahayu *et al.* 2010; Lamb and Rodda 2016) and is also believed to have potential medicinal uses (Rahayu 2011; Silalahi *et al.* 2015). This genus is distributed from China, Southeast Asia through to Oceania (Li *et al.* 1995; Wanntorp *et al.* 2014), with highest diversity probably in the Indonesian Archipelago and surrounding areas (Kleijn and Donkelaar 2001). Early treatments of Indonesian *Hoya* began in the Dutch Era, by Blume (1826), Miquel (1856), Koorders (1898), Schlechter (1913, 1916) and Backer and Bakhuizen van den Brink (1965). Since the 1990's the Program of Eksplorasi Flora Nusantara has continued investigations of *Hoya* with the Bogor Botanic Gardens (Rahayu 1997). This has yielded several new records and extensions of range, reported from several localities such as from Central Kalimantan (Rahayu 2006), Gunung Gede Pangrango National Park, West Java (Rahayu 2012), Sumatra (Rahayu and Wanntorp 2012) and Belitung Island (Rahayu *et al.* 2018).

The inventory provided new information including the number of species per location, new records and even new species. New records have been reported by Rahayu and Wanntorp (2012) who listed five species new for Sumatra, and two species as new records for Java (Rahayu 2012). After intensive study, several new species were then published from Indonesia, including *Hoya rintzii* Rodda, Simmonson & S.Rahayu from Sumatra and Kalimantan (Rodda *et al.* 2014), *Hoya undulata* S.Rahayu & Rodda from West Kalimantan (Rahayu *et al.* 2015), and *Hoya narcissiflora* S.Rahayu & Rodda also from West Kalimantan (Rahayu and Rodda 2017). The exploration of other locations in Indonesia continues to increase the number of new species and new

records, and expeditions to the poorly documented eastern part of Indonesia such as Maluku Islands and Papua (Indonesian New Guinea) are very important. The most recent inventories of *Hoya* in Papuasia, focused on tropical Australia and Papua New Guinea, had been conducted by Forster and Liddle (1992), Forster and Liddle (1993), Forster *et al.* (1995) and recently by Juhonewe and Rodda (2017) (only for Papua New Guinea) which included description of several new species.

During an expedition to the southern part of Buru Island, Maluku, eastern Indonesia, in the year 2014, a specimen of the genus *Hoya* identified as *Hoya anulata* Schltr. was collected. This species was formerly reported for Madang in PNG (Schlechter 1905, 1913), Mount Carstensz, Western New Guinea by Moore (1916) (as *Hoya schlechteriana*), Madang Province, Papua New Guinea (as *Hoya poolei*) by White and Francis (1928), Western Province, Papua New Guinea (as *Hoya pseudolittoralis*) by Norman (1937) and lastly from Queensland, Australia (as *Hoya alata*) by Hill (1988). Forster and Liddle (1992) updated the taxonomic concept of the species and revised the geographic distribution which was used by Albers and Meve (2002). No record of *Hoya anulata* from the Maluku Islands (Moluccas) has been published; as such our specimen from Buru Island is considered the first record from Maluku, and is presented here.

Taxonomic Treatment

Hoya anulata Schltr. in Schum. & Lauterb., *Nachtr. Fl. Schutzgeb. Südsee*: 362 (1905).

Type: Papua New Guinea (Kaiser-Wilhelmsland): Madang Province: Auf Baumen am oberen Nuru, auf de Wege vom Ramu zur Kuste, 4 Feb 1902, *R. Schlechter 14185* (holotype: B 100277181 (Curators Herbarium B (2017a); photo!).

=*Hoya schlechteriana* S.Moore, *Trans. Linn. Soc. London, Bot.* 9: 112 (1916).

Type: Irian Jaya, Camps III-VI, 1912-13, Utakwa River to Mt Carstensz, *CB Kloss s.n., s. dat.* (holotype: BM).

=*Hoya poolei* C.T.White & W.D.Francis, *Proc. Roy. Soc. Queensland* 39: 69, fig. 13 (1928).

Type: Papua New Guinea: Madang Province: Joangey, South eastern end of Finnistere Range, Dec 1923, *C.E. Lane-Poole 566* (holotype: BRI; isotype: K).

=*Hoya pseudolittoralis* C.Norman, *Brittonia* 2: 328 (1937).

Type: Papua New Guinea: Western Province: Dagwa, Oriomo River, Feb-Mar 1934, *L.J.Brass 5990* (holotype: NY; isotypes: A, BM, BO, BRI)

=*Hoya alata* K.D.Hill, *Telopea* 3: 249 (1988).

Type: Queensland: Pascoe River rockpile, 16 Sep 1983, *B. Wallace 83250* (holotype: NSW).

Climbing epiphyte or epilithophyte, to c. 3 m in length, plants with abundant white milky sap. Stem to 4.5 mm across, glabrous, internodes up to 9 cm long. Leaves opposite, blades elliptic, 7.5–8.2 × 4.3–5 cm, base obtuse to cuneate, margin entire, revolute, apex obtusely acuminate, coriaceous, glabrous on both sides, nerves faintly raised when dry, 6 on each side of the midrib, the two basal-most borne from the base; petiole robust, 5–9 mm long, wrinkled, broad and shallowly channeled above. Inflorescence on c. 7 cm long peduncle, rachis branched, 1.4–1.8 cm long, 2.5 mm across, cylindric, bearing c. 14 flowers blooming at the same time, pedicels slender, glabrous, 8–17 mm long. Flowers: calyx segment short, c. 1 mm long, glabrous. Corolla rotate, c. 1.05 cm across, pure white, fleshy, glabrous outside, inside papillose-puberulent, 5-lobed, lobes triangular, 3.5 × 3 mm, acute, reflexed at the apex. Corona c. 7 mm across, purple, glabrous, outer lobes narrowly ovoid, c. 2.5 × 1 mm, apex of lower part shortly bilobed, apex of upper part blunt, inner lobes erect, acute, c. 0.75 mm long, anther appendages covering the stigma, corpuscle blackish brown, c. 0.75 mm long, pollinia oblong, oblique, winged on outer side, yellow, c. 0.3 × 0.1 mm, apex obliquely truncate. Ovary, style, and stigma together c. 1.3 mm high. Fruit and seeds not seen. Fig. 1.

Distribution: New Guinea, Australia (Queensland) (Albers and Meve 2002, POWO 2018), and Maluku Islands (Buru). Distribution in Buru, Maluku Island is presented in Fig. 2.

Habitat in Buru: Growing on tree trunks which grow on limestone rocks, at around 11 m asl. Only one population recorded.

Flowering: February, April and July.

Vernacular name: Not recorded.

Uses: Not recorded.



Fig. 1. Inflorescence of *Hoya anulata* (Photo: W.A. Mustaqim).

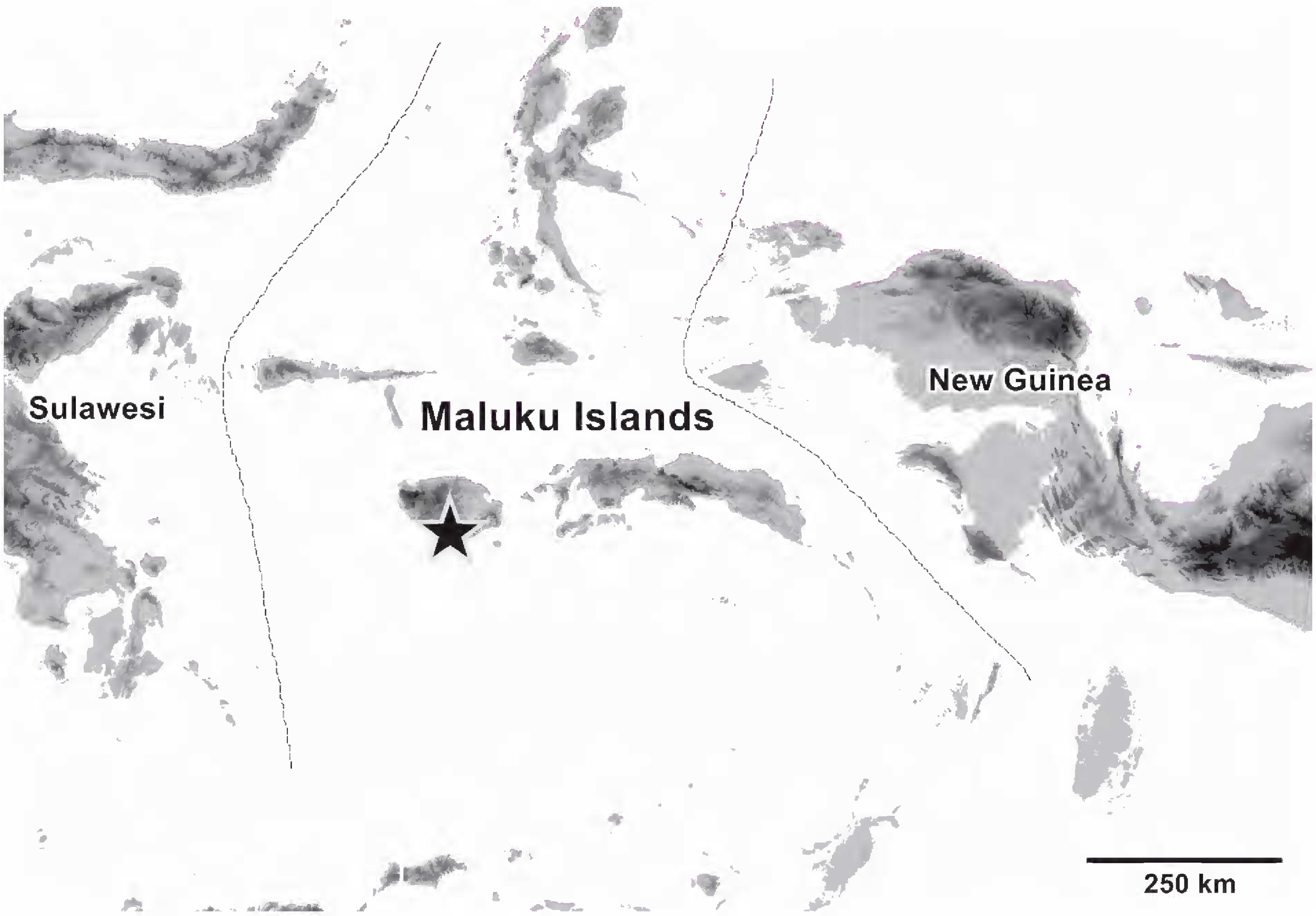


Fig. 2. Distribution of *Hoya anulata* in Maluku based on current record (★).

Additional material examined: Indonesia: Maluku: Buru Island, Buru Selatan Regency, Namrole District, Labuang Village, on tree trunk on steep limestone rock, near sea level, 11 m asl, (3°51'14"S 126°44'7.7"E), 25 Apr 2014, *WA Mustaqim & LH Buton 206* (BO!). Papua New Guinea: Morobe: Boana, on Big *Nauclea*, ?across river, 998 m, 15 Jul 1938, *M.S. Clemens 8480* (B (B100271822 (Curators Herbarium B (2017b)); photo!).

Notes: This species was discovered for the first time from 'Kaiser-Wilhelmsland', now part of Papua New Guinea, in the eastern part of the New Guinea island (Schlechter 1905). Eleven years later, specimens from the slope of Mount Jaya (Carstensz Pyramid) were described as *Hoya schlechteriana* S. Moore (Moore 1916). Prior to the discovery of the species in Buru, Maluku Island, the distribution in Mount Jaya area is the westernmost geographical range of the species.

Additional names have been published since Moore (1916). Two additional names were proposed based on plants from Papua New Guinea. First, *Hoya poolei* (White and Francis 1928) was described based on specimens from Madang, in the northeastern part of New Guinea. Second, *Hoya pseudolittoralis* C. Norman was published based on specimens collected by Leonard J. Brass from Western Province (Norman 1937). Later, Hill (1988) published another name based on specimens collected in Queensland as *Hoya alata* Hill. Two years later, Forster and Liddle (1990) concluded that *Hoya alata* is a synonym of *Hoya pseudolittoralis*. They also listed two records of *Hoya* from Australia as synonyms of *Hoya pseudolittoralis*, which are *Hoya* sp. (Jones and Gray 1977) and *Hoya gracilipes* auct. non. Schltr. (Jones and Gray 1988). Forster and Liddle (1992) considered that all mentioned names above are the same species and this concept is followed in this account. The latest compilatory information of this species has been published by Albers and Meve (2002), where this species is known from New Guinea and Australia.

It is not surprising to find this species in Buru Island since this island posses the same geological history with other localities in Australia and New Guinea based on a reconstruction of the geological history of the three regions by Hall (2002). Although we only record one locality in Buru Island, the only threat potential to the plant could be illegal collecting. Habitat destruction seems unlikely in the near future.

No information available on the local name and uses of this species in Buru Island. However, this species has a great potential for ornamental purposes since it has been found in a low elevation. The suitability caused by the facts that most settlements in Buru Island are mostly in lowland.

The species was found on a relatively inaccessible undisturbed slope of limestone bedrock. There are no records of this species in cultivation in surrounding settlements, and we did not observe it in cultivation during our trip to various localities in Buru Island. Therefore, we are confident our record is of an indigenous plant, and not the result of introduction or naturalization.

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